ally increased the export of manufactured articles from $100,000,000 to $150,000,000, the next three years show a slight increase, but only once was more than $160,000,000 of manufactured goods exported prior to 1894. That year and 1895 show $183,000,000 each, while the year ending June 30, 1896, shows $228,489,893, an increase of $45,-000,000 over any previous year. About ten millions of this increase is in manufactures of iron. Prices have apparently been forced down to the point where our manufacturers can compete in the markets of the world.

While the value of pig iron produced declined from $151,000,000 in 1890 to $65,000,000 in 1894, the value of the bituminous coal mined declined only from $110,000,000 to $107,000,000, and anthracite rose from $66,000,000 to $78,000,000. In both of these cases the value of the 1892 product was a little greater than either that of 1890 or 1894, and the returns would indicate that the coal industry has not suffered seriously.

Practically the same amount of petroleum was produced in 1894 as in 1890 and the same amount received for it. Perhaps here, as in the anthracite business, the monopoly has shown its *raison d'être*.

The railways of the country have suffered a decline of a little more than 10 per cent. in their gross earnings, if we compare their worst year with their best, but they are still collecting as many dollars as they did in 1890 and more than they ever did before that year. Yet this loss of 10 per cent. has thrown one-fourth of the railways into bankruptcy and seriously crippled the others. The transportation interest stands next in importance to agriculture, and collects for its service about one billion dollars, while the farmers receive for their most important crops about one and a quarter billion dollars. What would have been the effect on the railways if they had lost 25 per cent. of their revenue, as the farmers did? WILLIAM HILL.

PROFESSOR HADLEY'S CHAPTER ON TAXATION.[1]

IN a volume just published, Professor Hadley lays down the rules which should be decisive in the selection of taxes. A few sentences will make his position clear.[2]

[1] *Economics.* By A. T. HADLEY. (New York: G. P. Putnam's Sons, 1896). "Government Revenue," pp. 447–484.

[2] Pp. 450–451.

Adam Smith . . . . lays down four criteria of a good tax system :[1] equity, certainty, convenience of time of payment, and avoidance of unnecessary cost of collection, direct or indirect. If all these things can be combined, the tax is obviously a good one. But what if they cannot all be combined? What if the first two requirements be found to conflict with one another? What shall we do if the pursuit of equity demands sacrifice of certainty, and if all the methods of taxation which promise a sure return seem to leave some men untouched who can best afford to pay? . . . . In the light of experience in modern industrial communities there can scarcely be any doubt as to the proper choice. *Certainty* is the fundamentally important object, without which all attempts at equality prove illusory. With an uncertain tax no systematic improvement can be hoped for. With a certain tax any evils which exist at the outset tend to diminish as time goes on.[2]

These sentences are the key to all that Professor Hadley has to say upon taxation; they contain the one fundamental principle by which legislative bodies should be guided in framing revenue laws. Professor Hadley has but one principle of taxation—certainty; and this he constantly thrusts upon the reader's attention. The simplicity of his discussion of the fundamental principles of taxation approaches the naïve. Taxation, once a most complex subject, he has transformed into an exceedingly simple one. The question of equity, heretofore a vexed one, is easily disposed of; in fact, it takes care of itself; for if the tax at the time it is first imposed be unequal, this evil will diminish as time goes on. Equity introduces itself in the following manner:[3]

Assume that railroads were taxed at a higher rate than any other kinds of property. At first this would be an injustice to the owners of railroads; but as time went on fewer roads would be built, and the managers of those already existing would charge higher prices on account of the demand for transportation which they alone were able to meet. Part of the burden of the tax would thus be placed on the consumers. Meantime the lessened demand for railroad labor would tend to reduce either the number or the wages of the railroad employees; and the reduction in the demand for coal and for iron consequent upon the diminished extent of railroad construction would transfer part of the burden to those industries also. As this shifting process extended itself year after year it would include a wider circle of industries within its scope, and it would not cease until the profits of railroad enterprise, which were

[1] Smith's position is not as accurately presented as might be; he premised these four maxims as rules to be observed in imposing given taxes—not as principles of a tax system. Had he been speaking of a tax system he would doubtless have added other principles, such as sufficiency and elasticity.

[2] Pp. 450–451.

[3] P. 458.

first reduced by the tax, finally adjusted themselves to the same general level which prevailed in other industries.

Here we have a recrudescence of the diffusion theory which was at one time very popular with legislators, because it relieved them of the necessity of taking thought concerning the merits or demerits of taxes. N. F. Canard, whose *Principes d'Économie politique* appeared in 1802, was perhaps the first to give this theory scientific statement. As diffusion takes place but slowly, the rôle which time plays was emphasized by Canard as it is now emphasized by Professor Hadley; and in general it may be said that the later writer has not improved on the theory. The theory on the first reading seems very plausible. Let us, however, examine it more closely, taking as a test the illustration offered by Professor Hadley. Let us first consider how excessive taxes on railroads will operate (*a*) on those immediately connected with the railroads, and (*b*) on the community served by the railroads. Professor Hadley admits that if railroads were taxed at a higher rate than any other kind of property the owners of the railroads would suffer for some time. But the owners of the railroads would not be the only persons to suffer. As a consequence of the lessened demand for railroad labor, wages would fall and many persons would lose their positions. The length of the period during which these two classes of persons would suffer would depend upon the time necessary to bring about an adjustment of the transportation facilities to the new order. In a rapidly progressing community the readjustment would take place quickly, but in a stationary community it would require some time. Ultimately the operation which Professor Hadley outlines would take place, and the railroads would be freed from the excessive burden placed upon them at the outset. But both the employees and the owners are vitally interested in the present prosperity of the railroads, and they could not be expected to submit with patience to a tax system which would impose an undue burden upon them during a period of many years. If a better system could be devised they would insist—and rightfully—that their legislators should take thought about the matter and make such a distribution of the burdens of taxation as would not even temporarily ruin them.

It is fully conceded that the railroads would, after a time, manage to shift any excess of taxation which might be placed upon them. It is not conceded, however, that because the railroads had succeeded in removing a portion of the tax from their shoulders the tax had become

equitably distributed among the members of the community. A full discussion of this point would lead us too far afield.

How would excessive taxation of railroads operate upon the community served by them? That a system of taxation that checked the construction of new roads and lowered the efficiency of those already in existence would have a serious effect on the industrial life of the community cannot be doubted. Such a system of taxation would have the same effect as direct legislation arbitrarily prohibiting the construction of railroads. Not enough railroads could be operated to adequately serve the community, and the industrial efficiency of the community would be impaired. The extent to which the efficiency of the community would be impaired would depend upon the degree to which the construction and operation of railroads were interfered with. The injury which such a crude system of taxation would do the community would greatly exceed that done the railroads, for in the former case the injury would continue as long as the system of taxation lasted, while in the latter case it would be only temporary. Professor Hadley, however, in his discussion of excessive taxes on one part of the community, ignores the bearing of such taxation on the community as a whole.

> If all taxes were *continuous* in their operation, says Professor Hadley, we might trust to this shifting process (which has already been described) to make them equitable. We might fairly assume that in the long run the men who were able to pay taxes would pay them; while those who were unable to pay would be crowded out of an industry. . . . . But the matter is not thus simple. Taxes are not continuous in their operation. New grounds of expenditure arise which necessitate either an imposition of new taxes or an increase of old ones. Changes in industrial method may intensify this need by rendering the old taxes less productive; or they may operate in the reverse direction and produce a surplus which gives ground for a well-founded claim for reduction in tax rates. But whenever any tax is increased or reduced a change in economic burdens is created which it takes time to adjust and which may for months or years impose upon certain individuals an undue share of contributions to the public revenue before the matter finally adjusts itself in an equitable fashion.[1]

In the sentences which have been quoted there are two important admissions: (*a*) that frequent changes in the tax system are unavoidable, and (*b*) that changes in the tax system create a change of eco-

[1] P. 459.

nomic burdens which may for months or years impose undue burdens upon certain individuals. If all taxes were continuous in their operation, says Professor Hadley, we might trust to the diffusion process to make them equitable. But he has fully admitted that frequent changes in the tax system are inevitable, and therefore some discussion of the question of equity should be forthcoming. Some guiding principles should be laid down for the just distribution of the burdens of taxation when taxes are imposed. The reader is constantly led to expect a discussion of the first question of equity in the pages immediately following the sentences which have just been quoted, but he is disappointed in this and finally gives up hope when the author, in his examination of the relative merits and demerits of property and income taxes, takes the position that, "apart from the possibility of progressive or compensatory taxation, the theoretical advantages and disadvantages of income and property taxes are so closely balanced that the question between them must be decided on the basis of certainty of assessment and ease of collection."[1]

The little that Professor Hadley has to say concerning what should constitute the measure according to which people should be called upon to contribute to the support of the government is said incidentally. In one place he says that if there is a failure to shift what appears to be an excessive tax, "such a tax really puts the burdens where they belong—among those who have a distinct surplus under the processes of exchange or distribution."[2] At this point there can be no doubt that he is of the opinion that taxes should only fall on those having "a distinct surplus," or net revenue. In another place he says that "the possession of wealth is the chief criterion of a person's ability to bear an additional tax."[3] This may have been in accordance with the facts at one time, but it certainly is not true today. The large professional class, for instance, has but little property, and yet it enjoys a large income.

Very little that is new is to be found in the chapter on taxation, and this little is of doubtful value. A new classification of public revenues is offered, based on the methods of collection. In results it does not differ materially from that of Professor Seligman, based upon the comparative importance of the public and private purpose in the service rendered by the government.

Professor Hadley also makes a new division of taxes into direct and

[1] P. 464. [2] P. 458. [3] P. 463.

indirect, that is, he gives these terms a new meaning. In order to make the basis of this division clear, it will be necessary to point out the different ways in which, according to Professor Hadley, taxes are shifted; for the manner of transfer determines the classification. There are three ways, says Hadley, in which taxes are shifted. "In some cases the transfer is a perfectly simple one. The person who pays the tax to the government deducts the amount of that tax from payments which he would otherwise have been compelled to pay to some one else."[1] Other taxes, we are told, are transferred by "commercial competition." "A customs or excise duty is largely paid by the consumers, not voluntarily, but because the dealers find it impossible to furnish the goods at the price which prevailed before the imposition of the duty; and this reduction in current supplies produces competition among buyers, until the price rises high enough to compensate the importers for their expense under the new conditions of trade." The third way in which taxes are transferred is by industrial competition; not by the competition of buyers for a supply of products which the tax has suddenly reduced, but by the withdrawal of capital invested in certain lines where the tax has borne heavily, and a consequent slow, indirect readjustment of the relations of supply and demand. With the last of these ways of shifting taxes, says Professor Hadley, the distinction of direct and indirect has nothing to do. "The terms direct and indirect apply to immediate incidence, not to ultimate incidence. A tax is said to be *direct* when its immediate burden is shifted only by the first of these processes. It is said to be *indirect* when its immediate burden is shifted by the second of these processes."[2] This classification seems imperfect because it does not provide for all the different kinds of taxes. Are taxes which are not shifted at all and taxes shifted by "industrial competition" to have no place in the classification? Are there some taxes which are neither direct nor indirect? The classification is also faulty in that no sharp line can be drawn separating commercial and industrial competition. Professor Hadley admits this, but asserts that "there is a clear general line of distinction between the quick adjustment under the one process and the slow adjustments under the other."[2] Let us test this contention by a concrete example. Suppose the distilleries of this country to be making nothing more than the prevailing rate of profit, but that Congress thinks best to very largely increase the tax on whiskey. Now if the demand for whiskey

[1] P. 460. [2] P. 461.

were perfectly inflexible the whole tax could at once be shifted to the consumer, but we know that a considerable increase in price would curtail the demand, and this would make it impossible for the distillers to shift the whole tax. If the portion which still rested on the distillers were very large, those distilleries which were producing at a disadvantage would immediately shut down and some shifting by industrial competition would at once begin.

Professor Hadley says "The terms direct and indirect apply to immediate incidence only." If this be the case how can he make the manner of shifting the basis of the distinction? Has he not expressly excluded that upon which he grounds his classification? The immediate incidence of a tax is on the person who first pays the tax, and if discussion be strictly confined to immediate incidence any discussion whatever of shifting is precluded. Professor Hadley, however, does not abide by his own definition. In discussing shifting by "commercial competition" he discusses ultimate incidence. In view of the scant success which has attended his efforts perhaps it would have been better had he made no attempt to re-establish terms of such doubtful value as "direct" and "indirect," which of late have been deservedly falling into disuse.

As has already been suggested, the discussion does not always accurately reflect the position of the authorities cited. We are told that, in enumerating the criteria of a good tax system, "by placing equity first, Smith gives countenance to the popular view that we should make this not only our ideal of taxation but our guiding principle in framing tax laws."[1] This attaches altogether too much importance to the mere sequence of Adam Smith's maxims, as appears from a definite statement bearing directly on the point. "The certainty of what each individual ought to pay is, in taxation, a matter of so great importance, that a very considerable degree of inequality, it appears, I believe, from the experience of all nations, is not near so great an evil as a very small degree of uncertainty."[2] Surely, in the face of such a positive statement found in the discussion of the point under consideration a mere inference drawn from the sequence of statement must give way.

In conclusion it may be said that the chapter on taxation not only does not make any contribution of value to the science of finance, but it does not even present the best existing thought on the subject. In

[1] P. 451.

[2] *Wealth of Nations* (Hartford edition), vol. ii, p. 253.

general, a rough and ready policy is advocated; the principles of taxation which are advanced are so crude that they could not have found favor, even in the beginnings of the science. The principles of taxation advocated are such that if they were embodied in our revenue laws it is probable that they would seriously impair the industrial efficiency of the nation. In a volume which bears the subtitle "An account of the relation between private property and public welfare," one has a right to expect a better treatment of this important subject.

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THE FALLACY OF INDEX-NUMBERS.

A CONTINUOUS decline in prices since 1873 is supposed to be proven by the various tables of index-numbers which have been published. It is the examination of this method to which we shall give ourselves. It is a most remarkable fact that, although the method of index-numbers has been extensively used, especially in England, to determine the extent and direction of the general movement of prices, or its converse, the variations in the purchasing power of the money unit, still to my knowledge no one has yet clearly and conclusively exposed the worthlessness of this method of argumentation. Many valid objections have been urged to this table, or to that other, in regard to the reliability of the data on which it was based; other equally valid objections have been made to minor details in the application of the method; the trustworthiness of the method itself has been impugned on the ground that it does not give a quantitative value or "weight" to its percentages or ratios, and this objection, too, is valid and of great importance; but no one so far as I know has suspected that, by the method of index-numbers, quantity coefficients, whole or fractional, are covertly juggled into every single ratio determined by this method. The distortions caused by these unseen coefficients, which owe their origin to pure chance, are such as to entirely invalidate all the results arrived at by this method. It is time for the veneration of this fetich to cease.

To begin with, it will be well to insist that the word "average," when applied to price, demands the consideration of quantity; otherwise such average tacitly assumes the quantities to which the